



The Blurb



*Newsletter of The Phil-Mont Mobile Radio Club
66 Years of Public Service, 1949 to 2015*

Volume 67 Number 6

www.phil-mont.org

June 2016

***There's a Board Meeting on the 1st and
The General Membership Meeting Is on the 8th at Giant in Willow Grove***

**Field Day is the weekend of the 25th and 26th
At Ft. Washington State Park
*Have you told Steve how many meals you need yet?***

*Inside... Barry tells us about sound card scopes
Bob's article about capacitors begins
Request for MS150 help: info on page 10
ICOM event coming up at MCCC*

Pop-pop feeding Gio



The Malones welcome a new (future) Ham

New grandson 5/14/2016
Giovani Malone Christy
8.5 lbs. 21 inches

<i>The Blurb</i> is published monthly by and for the members of The PHIL-MONT MOBILE RADIO CLUB, Inc., whose purpose is to promote Amateur Radio in general, and Mobile Radio in particular. Copying and quoting is permitted with a credit line. We gladly exchange publications with other amateur radio clubs. Requests should be sent to the Editor: Rick DeVirgiliis ND3B@ARRL.net Subscriptions are available to non-members for \$12, addressed to the Treasurer. Labels and mailing: KB3IV Submissions deadline: All copy must be in the hands of the Editor by the 20th of the previous month.		Directors: N3QV(17) W3RM(17) K3HWG(17) WA3KIO(16) KB2ERL(16) ND3B(16) W3STW(A)	Contact Phil-Mont: P.O. Box 404 Warminster, PA 18974 http://www.phil-mont.org Website: Eric N3QV & Andrew KC2PMW For club information: Contact any club officer, or the repeaters listed below. Address or club directory changes and articles for the membership e-mail list should be sent to: KB3IV
		Sunday Morning Net Schedules • 2 Meter/ 70cm Net..... at 0930L on W3QV repeater • 10-on-10 Net at 1000L 28.393 MHz USB (±QRM) • 75 meter Net at 1020L 3.993 MHz LSB • ARES at 2100L on the W3QV repeater	
Committees Blurb folding: KB3IV & N3GLU Directory: KB3IV Field Day: KC2PMW Fusion Coord: NC3U	Internet: N3QV & KC2PMW Membership: K3HWG Net Control: KB3IV	Program: W3AOK Publicity: W3RM Refreshments: W3AOK Repeater: W3AOK	Scholarship: W3RM Sunshine: N3GLU VE Program: NS3K Welcome: N3UBY Youth: KC2PMW

All visitors are welcome!

The club meets at 7:00 PM on the *second* non-holiday Wednesday each month except July and August at Giant Supermarket, 315 York Rd, Willow Grove, PA
 Maps and directions are available at www.phil-mont.org.

License Examinations are held on the fourth **non-holiday Thursday** each month at **Community Ambulance Association, 1414 E. Butler Pike, Ambler PA 19002**
 Registration begins at 7:00 P.M. Applicants should contact Jim McCloskey NS3K at 215-275-2979 or jmccloskey@msn.com for the latest information.

Club Stations W3QV/R: The Jim Spencer Memorial Repeater System
 Ridge & Port Royal Avenues, Philadelphia, PA **Trustee: W3RM**
147.03 MHz + PL 91.5 Hz 444.80 MHz + PL 186.2 Hz
 Reach us on EchoLink through W3QV-R
W3AA Trustee: WU3I
W3EM: Field Day/special event station Trustee: N3QV

The Officers

President: WA3GM Greg Malone wa3gm@yahoo.com
Vice President: W3AOK Bill Popovic w3aok@verizon.net
Treas: KB3IV Ed Masarsky kb3iv@comcast.net
Secretary: WU3I Steve Hoch wu3i@arrl.net

The Prez Sez ...



Hello Philmont-

Field Day is just around the corner. June 25 & 26 will be the dates this year. We will again be at Ft. Washington State Park 420 Militia Hill Rd, Fort Washington, PA 19034.

Our Field Day Coordinator for this year is Bob KB2ERL. Band Captains please get in touch with Bob KB2ERL ASAP so we can firm up plans. I believe as of this writing we still need a 40 meter and 10 meter band captain. All members are encouraged to come out and visit and more importantly operate during field day. If you can provide any advance notice of the times you can operate that would be much appreciated. This is NOT a fast paced contest type environment. This is a fun family type environment as well as checking our readiness for emergency type operations so come out and join us. This would be a good opportunity to bring the kids and the grand kids so they can operate. Some of us should be arriving at around Noon time on Friday to get things rolling. If you can lend a hand please come out and help.

As always Steve WU3I providing us with meals throughout the weekend. Come savor whatever delicacies Steve has in store for us. Those attending Field Day **PLEASE** get in touch with Steve, WU3I and let him know which meals you will partaking so he can prepare the proper amount of food thus assuring that **YOU** will not go hungry.

The Phil-Mont general meeting in May was very well attended by members and visitors. Discussions were on Field Day and the upcoming MS 150. Volunteers are always needed for the MS 150. More info on this next month.

The following is a list of speakers for our meetings for the next few months:

June 8 2016: "How Sound Cards and Radios Work Together" Professor Barry Feirman K3EUI of our Digital Education Net will fill us in on sound cards along with some Demos etc...

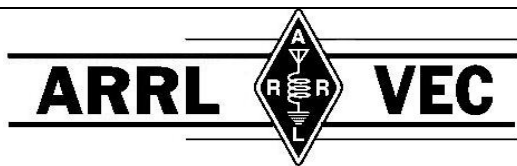
July/August Summer Break

Don't forget to order your PHIL-MONT Jackets and Hats that you see other members wearing to different events. Our supplier is B&B Embroidery and their web site is www.hamthreads.com Please contact Bill K3HWG for more info on these items.

If anyone has any suggestions for a speaker or would like to speak at one of our meetings please let any of the club officers or board members know. Your input is vital and we welcome all suggestions.

Don't forget to sign up for the Phil-Mont Yahoo Group. We currently have 40+ members. This is a good way to share ideas amongst the membership. Thanks to Sal NC3U for starting and moderating the group. For more info and to join the group contact Sal. See you all at the next meeting.

73, Greg WA3GM



There's a Saturday morning session on the 11th and the Thursday evening session is on the 23rd this month.

As always, many thanks to our VE team!

Phil-Mont Birthdays & Tidbytes

JUNE BIRTHDAYS

03 Jennifer Caswell – KB3MIV

04 Dick Moll - W3RM

Delores Gift (XYL K3HWG)

06 Andrew Neustadter - AB3XT

08 James Lanigan - WA3ERQ

10 Thomas Maresca (OM K3YPH)

Brian Gradel - KC3EQF

22 Richard Roth- K2RSJ

24 Neil Griffith-W2GTV

30 Mike Lenczynski - KA3EIP

Fred Rice - WA3KIO

20 Robert Witmer - W3RW

21 Sharon Roth (XYL K2RSJ)

17 Kathleen Johns-(XYL K3JQH)

18 Sal Marandola-NC3U

13 Ronald Rubin - K3RON

15 Caitlin Brady – W3CJB

John Coupe - WA3BXH

New Member Applicant:

Joe Sabich No call yet, Just passed test at VE session on Thursday May 26

Rydal, Pa

Occupation - Classic Computers, Inc Willow Grove, Pa

MEMBERSHIP STATS

At press time P.M.R.C. has:

111 FULL PAID MEMBERS

11 FAMILY MEMBERS

2 YOUTH MEMBERS

1 HONORARY MEMBER

From the Secretary

May 11, 2016

WA3GM opened the meeting at 7:14 PM.

KB3IV reported we got money in the treasury. Ed introduced new member applicant WA3ERQ Jim and soon to be ham Joe.

W3AOK reported a new fusion repeater is coming. KBEIV wearing another of his hats reported the new directory is on the way.

NS3K reminded us the next VE session was going to be 5/26/2016.

W3STW reminded us all to check out the Digital education Net on Tuesday evenings at 7:00 pm on the repeater. They are always looking for more participants.

WA3DSP introduced WB3DZZ George.

NS3K reminded all of the upcoming Icom Event (see page 9)

KC3BRA mentioned the WIRES X is working well with node 21080 Americas link featured.

In the absence of KB2ERL WU3I reported on the upcoming Field Day plans.

A presentation on the upcoming MS 150 was given by WU3I a 25 year plus participant.

Meeting was adjourned at 8:16

Motion made by K3HWG and seconded by W3STW

A mad dash for the door ensued.

Respectfully Submitted

Stephen Hoch WU3I

What can you do with a Sound Card and a Radio? K3EUI Barry

In the past five years W3STW and K3EUI have been running the PMRC “Digital Educational Net” (the DEN) on Tuesday evenings, 7 – 8 pm local time on the two meter Jim Spencer Memorial Repeater system from Roxboro, Pa. In those years we have covered a number of different programs (all free) that can use a personal computer to enhance the capabilities of any amateur radio station.

Computers can be used to log contacts, track satellites, predict band openings and of course, add digital communications possibilities to any radio with the use of the built in “sound card” (now on the motherboard of a laptop or desktop). We have covered about a dozen different programs in the five years of the DEN, and today I would like to share with the PMRC the use of a program called **Sound-card Oscilloscope** by C.Zeitnitz.

You can learn a lot about the quality of an analog audio signal by looking at its wave shape, called an oscilloscope pattern, and by examining the frequency distribution, called a “Fast Fourier Transfer” or **FFT**. When in hardware these are called “**Oscilloscopes**” and “**Spectrum Analyzers**” and can cost hundreds of dollars. We can also create an oscilloscope and a spectrum analyzer, at least for audio frequencies (below 10 kHz) using free software and a computer sound card.

The human ear and brain is an amazing combination of hardware/software. Sounds can be heard from an intensity level of 0 dB (the faintest sound the average person can hear at a pitch of 1000 Hz) to a maximum level of about 120 dB, a range of many magnitudes. The average person can also hear sounds from a pitch (frequency) of 20 Hz (a low rumble like sound) to almost 20,000 Hz (20 kHz). Most human speech occurs in a more restricted range of 300 Hz to 3000 Hz. Of course, music extends over a much wider range for “full fidelity”.

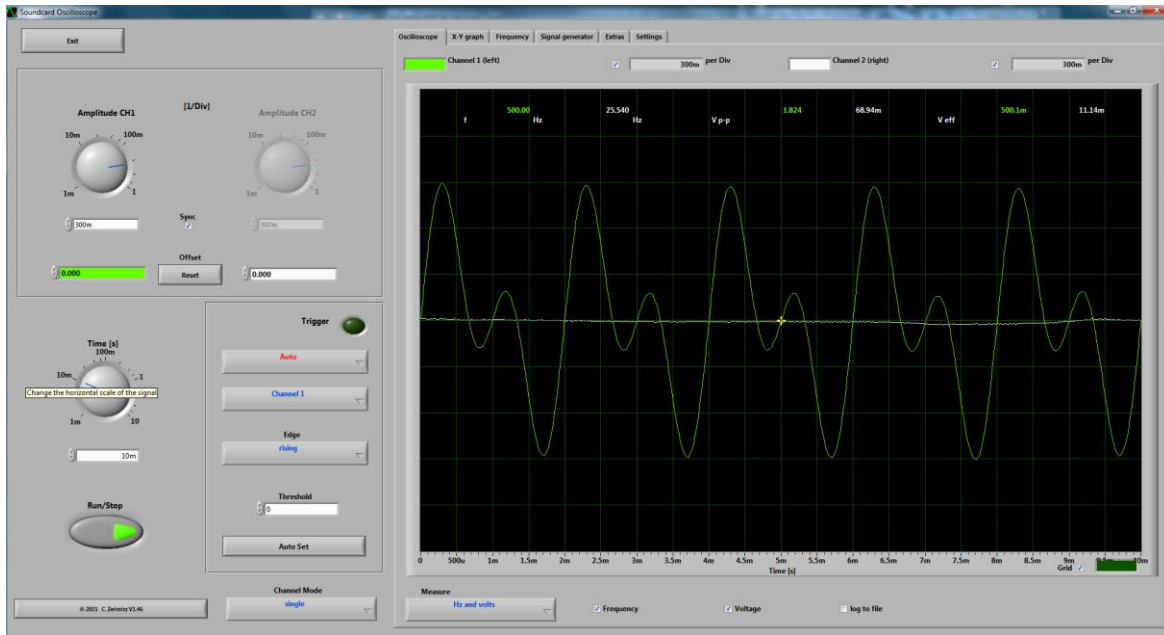
HF SSB radios designed for voice, CW, and data modes use “filters” to limit or restrict the bandwidth of the signal to be copied. Broad voice (phone) filters often use a lower limit of 300 Hz for the bass and 2.7 kHz for the high treble end, resulting in a bandpass of about 2.4 kHz. As conditions deteriorate with QRM, QRN, and QSB we often find it necessary to reduce the filter bandwidth to 2.0 kHz or less by eliminating both the high and low end of the bandpass. Modern DSP digital filters make this easy. For CW contacts, very narrow filters (under 500 Hz) can be used to zero in on the desired signal, eliminating interference from other nearby signals and atmospheric noise. For some of the very narrow digital modes (PSK31, JT65) it is possible to use a bandwidth of under 100 Hz. All of these filters attempt to improve the “signal to noise” (S/N) ratio.

So why would we want or need a sound card based oscilloscope? A sound card based oscilloscope allows you to examine up close the details and structure of an audio wave coming in or out of your radio. Say we want to see the high frequency cutoff on our FM radios, examine the frequency range of a new microphone, or see the PL tone on our repeater system. An oscilloscope connected to the receive audio out (speaker, headphone, or DATA jack) allows one to see in detail how the audio energy is distributed across the spectrum. Likewise, one can examine your own transmit audio bandpass to see if there is any loss of fidelity or distortion in your signal, or check for clipping with a speech processor turned on. For the digi modes, like RTTY, PSK, and others, an oscilloscope allows you to see the structure of the audio tones to look for signs of distortion such as clipping, IMD, or harmonic content.

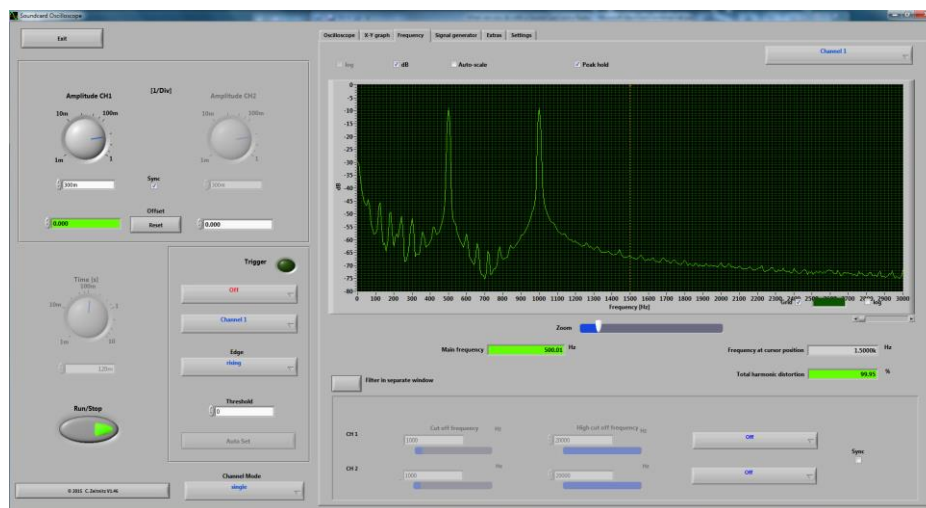
In the next few slides, I will show some examples of the program Sound Card Oscilloscope. The first slide shows the standard view; that is, an **oscilloscope view** where the sound volume is plotted on the Y axis, and time (milliseconds) is plotted on the X-axis. The scales on each axis can be adjusted in software. A single pitch (sine wave at 1000 Hz) is shown as an example of just about the simplest kind of audio wave, resembling the sound one would hear from a tuning fork. The software sliders on the left side of the picture allow the operator to adjust the Y (amplitude) and X (time) to get a steady pattern. One can press SAVE and print the pattern if needed.



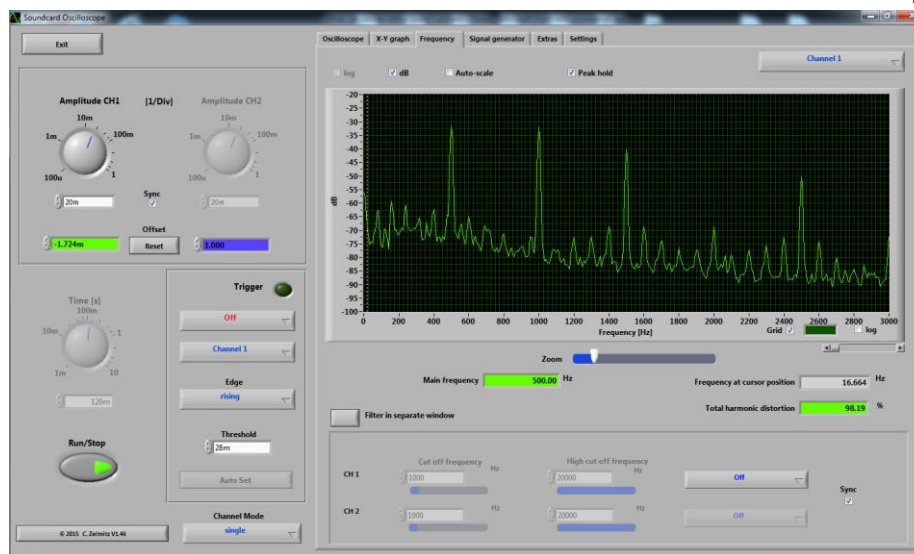
What happens if we turn on two sine wave oscillators, one at 500 Hz and a second at 1000 Hz. What would you expect to see and what would you expect to hear through a radio? A simple view would be we should hear (and see) two separate, non-interacting sounds, but often the two sounds will “modulate” or mix in a **non-linear circuit** in our radio transmitter and produce additional sounds (intermodulation) that were not present in the original two waves. How much of this kind of distortion can we tolerate in our SSB and FM voice and digital radios? Here is a screen shot of the Sound Card Oscilloscope showing an “oscilloscope” view of the two sine waves (500 Hz and 1000Hz). You can clearly see the two waves as mixing, producing a more complex wave of varying amplitudes and frequencies. This is a simple example of just mixing two sine waves with a frequency ratio of 2:1.



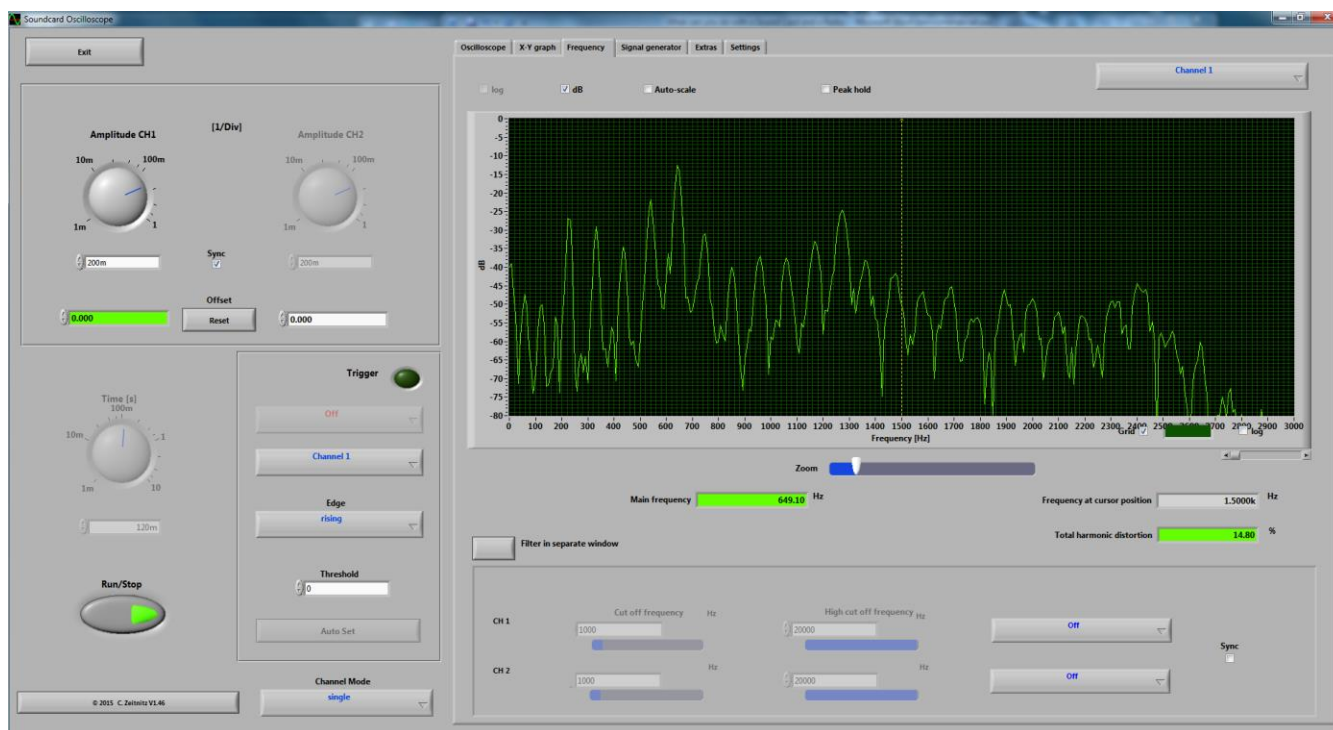
Next let's take a look at these same two sine waves from the point of view of a “**spectrum analyzer**”; that is, looking at how much energy occurs (Y axis) over the frequency range of 0 Hz to 3000 Hz plotted on the horizontal axis. This is kind of a “electronic fingerprint” of the sound, showing two spikes at the frequencies of 500 Hz and 1000 Hz, with very little mixing or intermod at higher frequencies. This screen shot was taken by just mixing of the two sound waves in the computer sound card. Note the only waves shown are the original waves at 500 Hz and 1000 Hz with no “mixing products” at higher frequencies on the spectrum.



Next we will feed the same two sine waves, 500 Hz and 1000 Hz, into the microphone jack of a 2 meter FM transmitter and transmit on a simplex frequency. The screen shot below shows the audio picked up on a second FM receiver. Clearly this pattern shows the presence of new waves at the SUM of the two frequencies (1500 Hz) and multiples at 2000 Hz and 2500 Hz.



Finally, here is a screen shot of a male voice recorded on the 40 meter SSB band. Clearly the person's voice consists of many different frequencies over the limited range of the radio's audio passband (about 3 kHz). Voice peaks in the 200 Hz to 700 Hz region seem to contain the most energy (highest amplitude) common with many transmitters. One could tweak the audio bandpass of your transmit audio to suite your own voice; perhaps increasing the treble frequencies around 2500 Hz for DX contacts, and increasing the bass below 500 Hz for local chats.



For the PMRC June General Meeting talk I will show the audio spectra of a few of the common digital modes heard on HF these days: CW, PSK, Olivia, and JT65.



**The Philadelphia Digital Radio Association
(K3PDR) proudly presents:**

Icom Amateur Radio in the Delaware Valley

When: June 6, 2016 — 7:00pm until 9:00pm

Where: College Hall Room: 144/148
Montgomery County Community College
340 DeKalb Pike Blue Bell, Pa. 19422

Icom Special Guests:

Hiro Nakaoka, JK3UZC (Icom America President)
Nick Pennance, N1CKP (Icom America Vice President)
Naomichi Sawada, NC5W (Icom Senior Engineer)
Also, Icom America's Amateur Sales leadership and marketing team members



For the love of ham radio.

Prizes from Icom and COMMPATHS LLC

- Light refreshments will be provided
- Please ask our Icom guests questions about their products and future plans, as well as to say hello

A great evening for Amateur Radio, come out and show your support!

Questions*:

Please feel free to email or call Jim, see below:

email: jmccloskey@msn.com

call: 215.275.2979

web: Check for updates, www.k3pdr.org

**Montgomery County Community College is not affiliated with this event and the college should not be contacted regarding the program*

MS 150

Hello Fellow HAMS:

This is Joe (KC2SFB)

Those of you that know me, know that this is the time of year that I start to BEG and GROVEL. The MS 150 is only 4 months away, and while you may think that it is far off, believe me, it is right around the corner.

It was very unfortunate last year that the event was cancelled due to a "State of Emergency" in New Jersey (the only cancellation in 35 years), because it would have been our best year in a long time. We had 103 HAMS on our roster, which was great, but we need 125 HAMS to cover this event properly. (Not counting the 35 to 40 non-HAMS that we need to assist in non-radio positions.)

As I said, I am not ashamed to BEG – so:

PLEASE PLEASE PLEASE

dig deep to try to find that weekend (September 24th and 25th) clear to volunteer for the event. We have many route positions available, and we try to make the weekend as active as possible.

Remember, not only are we fulfilling our public service responsibilities, there is food and drink available all day at any of the rest areas, and 2 day volunteers receive dinner in Ocean City on Saturday night, and a room in Ocean city on Saturday night by availability and the earlier that you volunteer, the easier it is to get the room.

Believe it or not, this is a short email. Attached you will find the sign-up form for the event. You can fill it out and email it back, or snail mail it back, or you can sign up on line at :

<http://main.nationalmssociety.org/HAMS>

Please email us if you would like to be sent our 2016 Communications Info Package.

Thank you again, and we look forward to working with a lot of you this year.
(Please forward this email to as many HAMS as you know)

With Much Appreciation

73

Communications Operations Team 609.316.8220

THE X AND Y OF CAPACITORS

Safe power line bypassing

Bob Thomas, W3NE

It has been normal practice for a number of years to connect bypass capacitors across the primary of transmitter and receiver power supplies, and in many cases from power line-to-ground. On transmitters, the low reactance of a bypass capacitor across the a-c line, typically .0047 μ F or higher, effectively short-circuits stray RF, preventing it from feeding back through the line where it could possibly cause interference in BC or TV receivers. Line bypass capacitors on receivers attenuate stray HF and pulse interference riding on the line that might otherwise degrade received signal quality or even damage the receiver.

Line bypassing has customarily been accomplished in the past with ordinary ceramic or paper-dielectric tubular capacitors. However, there are potentially dangerous consequences from continuing that practice. In addition to the expected a-c sine wave, utility power lines frequently have short duration transients higher than 1500 volts which can destroy ordinary bypass caps in an instant, even resulting in a fire or at least a loud report and smoke. If that hasn't happened to any of your equipment yet, you are lucky. The problem has become such a serious concern industry-wide that new types of circuit-specific capacitors of flameproof construction have been developed by manufacturers to comply with rigorous domestic and international performance standards. They are designated "safety capacitors," and are widely available through normal electronic parts dealers such as Mouser and Allied Electronics.

There are two types of safety capacitors, each with strictly defined applications: "X" capacitors are intended for line-to-line bypassing and are available in a very large range of capacitances, "Y" capacitors, on the other hand, are for bypassing the line to ground, and have a maximum value of .0047 μ F to avoid the possibility of tripping a GFI (Ground Fault Interrupter). Those two types are further subdivided into several classes each, such as X1 and X2, or Y1, Y2, Y3 and Y4. Each subdivision is based on maximum working voltage and the highest instantaneous peak impulse voltage the capacitor will withstand. The numerous combinations of ratings available with all those classes can be confusing, to say the least, but for typical ham requirements, X1 capacitors are the best choice for line-to-line bypassing, and Y2 for line-to-ground. There is also an X1/Y2 class that may be used for bypassing across the line or line-to-ground.

Each manufacturer has its own designations for various classes of safety capacitors. To simplify your selection, look in the dealer catalogs mentioned above for the value, rating and physical size you intend to use within any of the following manufacturers' types, all of which are safety rated:

Vishay/Sprague: 125L Series

Kemet: 900 Series

Murata: Types KY and KX

(To be continued...)

June at Phil-Mont

1 Wed Board Meeting
 5 Sun KC3DII
 6 Mon D-Day 1944
 8 Wed General Club Meeting
 11 Sat Morning VE session
 12 Sun W3STW
 14 Tues Flag Day
 19 Sun Father's Day
 KB3IV
 20 Mon Summer begins
 23 Thur evening VE session
 25 Sat Field Day begins
 Korean war began 1950
 26 Sun NC3U

***Don't forget the ARES net on Sunday nights and
 the Digital net on Tuesday nights.***

Lenovo Laptop For Sale

***500 gig HD, 4 gig RAM, AMD processor
 Bought by mistake, never used (long story)
 \$225 or best offer Rick, ND3B@arrl.net or
 215-908-7225***

For Sale

***1/8" (290#) & 3/16" (380#) Dark Olive Drab
 Braided Cord · 100% Polyester/Dacron Knit
 Braided. Nice stuff! Tough and long lasting · UV
 Resistant and Low Stretch Proudly Made in the
 U.S.A.! Contact Steve WU3I at wu3i@arrl.net or
 215-605-6074***

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First Class Mail

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 1700 Street Rd. Apt. H3, Warrington PA, 18976

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